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RAW SEQUENCE LISTING

DATE: 08/28/2002

PATENT APPLICATION: US/10/050,050

TIME: 09:59:25

Input Set : N:\Crf3\RULE60\10050050.raw Output Set: N:\CRF4\08282002\J050050.raw

## SEQUENCE LISTING

```
ENTERED
      3 (1) GENERAL INFORMATION:
      5
             (i) APPLICANT: COHEN, CHARLES M.
      6
                             CHARETTE, MARC F.
      7
                             KUBERASAMPATH, THANGAVEL
      8
                             RUEGER, DAVID C.
      9
                             OPPERMANN, HERMANN
     10
                             PANG, ROY H.L.
     11
                             OZKAYNAK, ENGIN
     12
                             SMART, JOHN E.
     14
            (ii) TITLE OF INVENTION: MORPHOGEN TREATMENT FOR LIMITING
     15
                                      PROLIFERATION OF EPITHELIAL CELLS.
     17
           (iii) NUMBER OF SEQUENCES: 33
     19
            (iv) CORRESPONDENCE ADDRESS:
     20
                  (A) ADDRESSEE: PATENT ADMINISTRATOR, CREATIVE BIOMOLECULES
     21
                  (B) STREET: 45 SOUTH STREET
     22
                  (C) CITY: HOPKINTON
     23
                  (D) STATE: MA
     24
                  (E) COUNTRY: USA
     25
                  (F) ZIP: 01748
     27
             (V) COMPUTER READABLE FORM:
     28
                  (A) MEDIUM TYPE: Floppy disk
     29
                  (B) COMPUTER: IBM PC compatible
     30
                  (C) OPERATING SYSTEM: PC-DOS/MS-DOS
     31
                  (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
     33
            (vi) CURRENT APPLICATION DATA:
C--> 34
                  (A) APPLICATION NUMBER: US/10/050,050
C--> 35
                  (B) FILING DATE: 15-Jan-2002
     36
                  (C) CLASSIFICATION:
     38
           (vii) PRIOR APPLICATION DATA:
     40
                  (A) APPLICATION NUMBER: US/08/461,113
     41
                  (B) FILING DATE:
     43
                  (A) APPLICATION NUMBER: US 08/445,882
     44
                  (B) FILING DATE: 22-MAY-1995
     46
          (viii) ATTORNEY/AGENT INFORMATION:
     47
                  (A) NAME: FENTON Esq., GILLIAN M.
     48
                  (B) REGISTRATION NUMBER: 36,508
     49
                  (C) REFERENCE/DOCKET NUMBER: CRP-074DV
     51
            (ix) TELECOMMUNICATION INFORMATION:
    52
                  (A) TELEPHONE: (508) 435-9001
     53
                  (B) TELEFAX: (508) 435-6951
    56 (2) INFORMATION FOR SEQ ID NO: 1:
             (i) SEQUENCE CHARACTERISTICS:
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59
            (A) LENGTH: 97 amino acids
   60
            (B) TYPE: amino acid
   61
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
   62
   64
        (ii) MOLECULE TYPE: protein
   67
        (ix) FEATURE:
   68
            (A) NAME/KEY: Protein
   69
            (B) LOCATION: 1..97
            (D) OTHER INFORMATION: /label= GENERIC-SEQ-1
   71 /note= "EACH XAA INDICATES ONE OF THE 20 NATURALLY OCCURRING
   72 L-ISOMER, ALPHA-AMINO ACIDS, OR A DERIVATIVE THEREOF"
   75
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W--> 77
        78
                                 10
         Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Cys Xaa Xaa Xaa
W--> 80
   81
                              25
W--> 83
         84
                            40
         W--> 86
   87
                         55
                                      60
W--> 89
        90
                      70
                                    75
        W--> 92
   93
                                 90
W - - > 95
        Xaa
C--> 112 (2) INFORMATION FOR SEQ ID NO: /label= GENERIC-SEQ-2
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                           /note= "EACH XAA INDICATES ONE OF THE 20 NATURALLY
OCCURING
   114
                           L-ISOMER, ALPHA-AMINO ACIDS, OR A DERIVATIVE THEREOF"
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   101
             (A) LENGTH: 97 amino acids
   102
             (B) TYPE: amino acid
   103
            (C) STRANDEDNESS: single
   104
            (D) TOPOLOGY: linear
   106
         (ii) MOLECULE TYPE: protein
   109
        (ix) FEATURE:
   110
            (A) NAME/KEY: Protein
   111
            (B) LOCATION: 1..97
   117
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
W--> 119
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                                 10
W--> 122
         Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Cys Xaa Xaa Xaa
   123
W--> 125
         126
                            40
W--> 128
         129
W--> 131
         132
W--> 134
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135
                                                 90
                                                                     95
W--> 137
              Xaa
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                   (A) LENGTH: 97 amino acids
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                   (B) TYPE: amino acid
     145
                   (C) STRANDEDNESS: single
     146
                   (D) TOPOLOGY: linear
             (ii) MOLECULE TYPE: protein
     151
             (ix) FEATURE:
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                   (A) NAME/KEY: Protein
     153
                   (B) LOCATION: 1..97
     154
                   (D) OTHER INFORMATION: /label= GENERIC-SEQ-3
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     157 SPECIFICATION "
     160
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W--> 162
             Leu Tyr Val Xaa Phe Xaa Xaa Xaa Gly Trp Xaa Xaa Trp Xaa Xaa Ala
     163
W--> 165
             Pro Xaa Gly Xaa Xaa Ala Xaa Tyr Cys Xaa Gly Xaa Cys Xaa Xaa Pro
     166
                         20
                                             25
W--> 168
             Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn His Ala Xaa Xaa Xaa Leu
     169
W--> 171
             172
                                     55
W--> 174
             Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa
     175
W--> 177
             Val Xaa Leu Xaa Xaa Xaa Xaa Met Xaa Val Xaa Xaa Cys Gly Cys
     178
W--> 180
             Xaa
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     186
                  (A) LENGTH: 102 amino acids
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                  (B) TYPE: amino acid
     188
                  (C) STRANDEDNESS: single
     189
                  (D) TOPOLOGY: linear
     191
            (ii) MOLECULE TYPE: protein
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            (ix) FEATURE:
    195
                  (A) NAME/KEY: Protein
    196
                  (B) LOCATION: 1..102
                  (D) OTHER INFORMATION: /label= GENERIC-SEQ-4
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    199 OF ONE OR MORE SPECIFIED AMINO ACIDS AS DEFINED IN THE
    200 SPECIFICATION"
    203
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:
W--> 205
             Cys Xaa Xaa Xaa Leu Tyr Val Xaa Phe Xaa Xaa Xaa Gly Trp Xaa
    206
                                                10
W--> 208
             Xaa Trp Xaa Xaa Ala Pro Xaa Gly Xaa Xaa Ala Xaa Tyr Cys Xaa Gly
    209
                                             25
```

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W--> 211
             Xaa Cys Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn His Ala
     212
                                          40
W--> 214
             215
                                     55
W--> 217
             Xaa Cys Cys Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa
    218
             65
                                 70
                                                     75
W--> 220
             Xaa Xaa Xaa Xaa Val Xaa Leu Xaa Xaa Xaa Xaa Aaa Met Xaa Val
    221
                                                 90
W--> 223
             Xaa Xaa Cys Gly Cys Xaa
    224
                         100
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              (i) SEQUENCE CHARACTERISTICS:
    229
                  (A) LENGTH: 139 amino acids
    230
                  (B) TYPE: amino acid
    231
                  (C) STRANDEDNESS: single
    232
                  (D) TOPOLOGY: linear
    234
             (ii) MOLECULE TYPE: protein
    237
            (ix) FEATURE:
    238
                  (A) NAME/KEY: Protein
    239
                  (B) LOCATION: 1..139
    240
                  (D) OTHER INFORMATION: /note= "HOP-1 (MATURE FORM)"
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:
    243
    245
             Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro Lys
    246
    248
             Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu Asn Ser Ser Ser
    249
                                             25
    251
             Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg
    252
                                         40
    254
             Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala
    255
                                     55
    257
             Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn
    258
                                 70
                                                     75
    260
             Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro
    261
                             85
                                                 90
    263
             Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile
    264
                         100
                                             105
    266
             Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr
    267
                                         120
    269
             Arg Asn Met Val Val Arg Ala Cys Gly Cys His
    270
                 130
    272 (2) INFORMATION FOR SEQ ID NO: 6:
    274
             (i) SEQUENCE CHARACTERISTICS:
    275
                  (A) LENGTH: 139 amino acids
    276
                  (B) TYPE: amino acid
    277
                  (C) STRANDEDNESS: single
    278
                  (D) TOPOLOGY: linear
    280
            (ii) MOLECULE TYPE: protein
    283
            (ix) FEATURE:
    284
                  (A) NAME/KEY: Protein
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285
                    (B) LOCATION: 1..139
     286
                    (D) OTHER INFORMATION: /note= "MOP-1 (MATURE FORM)"
     289
              (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:
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     292
     294
              Asn Gln Glu Ala Leu Arg Met Ala Ser Val Ala Glu Asn Ser Ser Ser
     295
                                                25
     297
              Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg
     298
     300
              Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala
     301
                                       55
                                                            60
     303
              Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn
     304
                                   70
                                                        75
     306
              Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro
     307
                               85
                                                    90
              Asp Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile
     309
     310
                           100
                                               105
                                                                    110
              Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr
     312
     313
                      115
                                           120
                                                                125
     315
              Arg Asn Met Val Val Arg Ala Cys Gly Cys His
     316
                  130
                                       135
C--> 332 (2) INFORMATION FOR SEQ ID NO: /note= "HOP-2 (MATURE FORM)"
              (i) SEQUENCE CHARACTERISTICS:
     321
                   (A) LENGTH: 139 amino acids
     322
                   (B) TYPE: amino acid
     323
                   (C) STRANDEDNESS: single
     324
                   (D) TOPOLOGY: linear
     326
             (ii) MOLECULE TYPE: protein
     329
             (ix) FEATURE:
     330
                   (A) NAME/KEY: Protein
     331
                   (B) LOCATION: 1..139
     335
             (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:
     337
              Ala Val Arg Pro Leu Arg Arg Gln Pro Lys Lys Ser Asn Glu Leu
     338
                                                   10
     340
              Pro Gln Ala Asn Arg Leu Pro Gly Ile Phe Asp Asp Val His Gly Ser
     341
                          20
                                               25
     343
              His Gly Arg Gln Val Cys Arg Arg His Glu Leu Tyr Val Ser Phe Gln
     344
     346
              Asp Leu Gly Trp Leu Asp Trp Val Ile Ala Pro Gln Gly Tyr Ser Ala
     347
    349
              Tyr Tyr Cys Glu Gly Glu Cys Ser Phe Pro Leu Asp Ser Cys Met Asn
    350
              65
                                   70
                                                       75
    352
              Ala Thr Asn His Ala Ile Leu Gln Ser Leu Val His Leu Met Lys Pro
    353
                                                   90
    355
              Asn Ala Val Pro Lys Ala Cys Cys Ala Pro Thr Lys Leu Ser Ala Thr
    356
                                               105
    358
              Ser Val Leu Tyr Tyr Asp Ser Ser Asn Asn Val Ile Leu Arg Lys His
    359
                                           120
    361
             Arg Asn Met Val Val Lys Ala Cys Gly Cys His
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Input Set : N:\Crf3\RULE60\10050050.raw
Output Set: N:\CRF4\08282002\J050050.raw

## Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

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Seq#:1; Xaa Pos.1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Seq#:1; Xaa Pos.24,26,27,28,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45
Seq#:1; Xaa Pos.46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,63,64,65,66,67
Seq#:1; Xaa Pos.68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87
Seq#:1; Xaa Pos.88,89,90,91,92,93,95,97
Seq#:2; Xaa Pos.1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Seq#:2; Xaa Pos.24,26,27,28,30,31,32,33,34,35,37,38,39,40,41,42,43,44,45,46
Seq#:2; Xaa Pos.47,48,49,50,51,52,53,54,55,56,57,58,59,60,63,64,65,66,67,68
Seq#:2; Xaa Pos.69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88
Seq#:2; Xaa Pos.89,90,91,92,93,95,97
Seq#:3; Xaa Pos.4,6,7,8,11,12,14,15,18,20,21,23,26,28,30,31,33,34,35,36,37
Seq#:3; Xaa Pos.38,39,40,44,45,46,47,49,50,51,52,53,54,55,56,57,58,59,60,63
Seq#:3; Xaa Pos.65,66,67,68,69,70,71,72,74,75,76,77,78,79,80,82,84,85,86,87
Seq#:3; Xaa Pos.88,90,92,93,97
Seq#:4; Xaa Pos.2,3,4,5,9,11,12,13,16,17,19,20,23,25,26,28,31,33,35,36,38
Seq#:4; Xaa Pos.39,40,41,42,43,44,45,49,50,51,52,54,55,56,57,58,59,60,61,62
Seq#:4; Xaa Pos.63,64,65,68,70,71,72,73,74,75,76,77,79,80,81,82,83,84,85,87
Seq#:4; Xaa Pos.89,90,91,92,93,95,97,98,102
Seq#:15; Xaa Pos.2,3,4,5
Seq#:29; Xaa Pos.2,3,9,11,16,19,23,26,35,39,41,50,52,56,57,58,60,61,65,71
Seq#:29; Xaa Pos.73,75,80,82,84,87,89,91,97
Seq#:30; Xaa Pos.2,3,4,6,7,8,11,12,14,15,16,18,19,20,21,23,26,28,30,31,33
Seq#:30; Xaa Pos.34,35,36,37,38,39,40,44,45,46,47,48,49,50,51,52,53,54,55
Seq#:30; Xaa Pos.56,57,58,59,60,63,65,66,67,68,69,70,71,72,74,75,76,77,78
Seq#:30; Xaa Pos.79,80,82,84,85,86,87,88,90,92,93,95,97
Seq#:31; Xaa Pos.2,3,4,5,7,8,9,11,12,13,16,17,19,20,21,23,24,25,26,28,31,33
Seq#:31; Xaa Pos.35,36,38,39,40,41,42,43,44,45,49,50,51,52,53,54,55,56,57
Seq#:31; Xaa Pos.58,59,60,61,62,63,64,65,68,70,71,72,73,74,75,76,77,79,80
Seq#:31; Xaa Pos.81,82,83,84,85,87,89,90,91,92,93,95,97,98,100,102
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VERIFICATION SUMMARY DATE: 08/28/2002 PATENT APPLICATION: US/10/050,050 TIME: 09:59:26

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L:34 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:35 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]
L:77 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0
L:80 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:16
L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:32
L:86 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:48
L:89 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:64
L:92 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:80
L:95 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:96
L:112 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:119 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:0
L:122 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:16
L:125 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:32 L:128 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:48
L:131 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:64
L:134 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:80
L:137 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:96
L:162 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0
L:165 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:16
L:168 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:32
L:171 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:48
L:174 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:64
L:177 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:80
L:180 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:96
L:205 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0
L:208 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:16
L:211 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:32
L:211 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:48
L:217 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:64
L:220 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:80
L:223 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:96
L:332 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:378 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:424 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:464 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:664 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15 after pos.:0
L:1391 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:1987 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:0
L:1990 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:16
L:1993 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:32
L:1996 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:48
L:1999 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:64
L:2002 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:80
L:2005 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:96
L:2030 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:0
L:2033 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:16
L:2036 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:32
L:2039 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:48
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VERIFICATION SUMMARY DATE: 08/28/2002 PATENT APPLICATION: US/10/050,050 TIME: 09:59:26

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L:2045 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:80
L:2048 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:96
L:2073 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:0
L:2076 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:16
L:2079 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:32
L:2082 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:48
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L:2088 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:64
L:2091 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:80
L:2091 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:96
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